Prevalence of Micronutrient Deficiency in Patients with Morbid Obesity Before Bariatric Surgery: What About Celiac Disease?

Dear Editor,

Celiac disease (CD) is a chronic immune-mediated disorder, characterized by villus atrophy of the proximal small intestinal mucosa and malabsorption of nutrients after the ingestion of wheat gluten or related proteins from rye and barley, in genetically susceptible individuals expressing the HLA class II molecules DQ2 or DQ8.

When gluten is ingested, it is broken down into peptides, particularly gliadin. It is thought that gliadin binds to antigen-presenting cells expressing HLA-DQ2 and HLADQ8. This event is facilitated by the enzyme ‘‘tissue transglutaminase’’. The peptides are then presented to intestinal mucosal T-lymphocytes which become activated, producing antibodies and cytokines, resulting in inflammation and intestinal mucosal injury.

Serum IgA EMA (endomysial antibody), IgA tTG (tissue transglutaminase antibody) and small bowel biopsy are the accepted tests to diagnose CD.

In the last decades, screening studies have shown a higher prevalence of CD than previously thought; up to 1% of the European and US population are affected at any age and in a wide variety of clinical circumstances.

In the past, CD was almost always recognized because of its classical presentation, seen mainly in children, characterized by a predominance of digestive symptoms like diarrhea, weight loss, and growth retardation. Today, the presentation of CD is more frequently atypical, with confusing symptoms or without symptoms at all. These latter forms may remain undiagnosed for years. The clinical manifestations of the disease vary greatly, and range from typical gastrointestinal manifestations (steatorrhea, vomiting, abdominal pain, diarrhea, muscle wasting, nutritional deficiencies) to absent, minimal, or unusual intestinal complaints with extraintestinal manifestations or disorders (atypical CD); the definition of silent CD includes a fully expressed gluten-sensitive enteropathy found after serologic

screening in asymptomatic patients [1]. Several extraintestinal manifestations, including anemia and osteopenia have been associated to CD [2].

Of note, CD patients can be overweight and obese: one study from the Northeast US found that 32% of patients with CD were overweight or obese at presentation, whereas only 6.8% of these were underweight [3].

In a recent interesting study, the authors [4] examined, preoperatively, the prevalence of micronutrient deficiency in patients with morbid obesity, in order to evaluate the need for nutritional counseling and appropriate substitution. In this cross-sectional, retrospective study, conducted at the Rudolfstiftung Hospital, Vienna, Austria between 2010 and 2015, 1732 Caucasian patients with morbid obesity (77.3% women, mean age: 40 ± 12 years, mean BMI: 44 ± 9 kg/m2) wishing to undergo bariatric surgery were enrolled. Patients aged < 18 years or > 60 years as well as pregnant women were excluded from evaluation. The authors demonstrated a high prevalence of micronutrient deficiencies. In particular, 97.5% of patients exhibited a deficiency in 25OHvitamin D, and 30.2% an elevated level of parathyroid hormone. These conditions are known to be associated with metabolic bone disease and osteoporosis. The authors tried to explain these results with the fact that patients with morbid obesity had a sedentary lifestyle and thus potentially less sun exposure. Furthermore, since people with morbid obesity tend to consume less milk, the authors hypothesized a minor intake of vitamin D. In addition, vitamin D is sequestered in the large pool of body fat, and therefore, its bioavailability is reduced. Moreover, a total of 63.2% of the patients had a deficit in folic acid and 9.6% in serum iron: this resulted in anemia in 10.8% of women vs. 3.1% of men. Folic acid is prevalent in leafy vegetables, whole meal products, and legumes and is characterized by a low storage capacity; iron is prevalent in meat, whole meal products. The authors hypothesized that low plasma levels were most likely due to decreased

consumption of the respective nutrients. However, in this paper, it is not reported if the authors have searched for CD.

Since CD is an important cause of 25OH-vitamin D, folic acid and iron malabsorption, its prevalence is constantly increasing but only about 1 of 5 CD patients are currently diagnosed and up to 32% of the patients with CD are overweight or obese at presentation, the search for CD in case of micronutrient deficiency is mandatory. Measurement of serum IgA EMA or IgA tTG anti-gliadin should be performed in this context even if the patients are obese: antibody-positive patients should be offered a duodenal biopsy.

Author 1: no conflict of interest

Author 2: no conflict of interest

Author 3: no conflict of interest

This article does not contain any studies with human participants or animals performed by any of the authors.

Informed Consent Statement: Does not apply.

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